

SEQUENZPROTOKOLL

<110> Memorec Stoffel GmbH

<120> Protease

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<150> 19902550.9

<151> 1999-01-22

<150> 19925946.1

<151> 1999-06-08

<150> 19929115.2

<151> 1999-06-24

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<170> PatentIn Ver. 2.1

<210> 1

<211> 592

<212> PRT

<213> Homo sapiens

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35 40 45

Asn Pro Gln Trp Ala His Leu Pro His Asp Leu Ser Lys Ala Ser Phe
50 55 60

Leu Gln Leu Arg Asn Trp Thr Ala Ser Leu Leu Cys Ser Ala Ala Asp
65 70 75 80

Leu Pro Ala Arg Gly Phe Ser Asn Gln Ile Pro Leu Val Ala Arg Gly
85 90 95

Asn Cys Thr Phe Tyr Glu Lys Val Arg Leu Ala Gln Gly Ser Gly Ala
100 105 110

Arg Gly Leu Leu Ile Val Ser Arg Glu Arg Leu Val Pro Gly Gly
115 120 125

Asn Lys Thr Gln Tyr Asp Glu Ile Gly Ile Pro Val Ala Leu Leu Ser
130 135 140

Tyr Lys Asp Met Leu Asp Ile Phe Thr Arg Phe Gly Arg Thr Val Arg
 145 150 155 160
 Ala Ala Leu Tyr Ala Pro Lys Glu Pro Val Leu Asp Tyr Asn Met Val
 165 170 175
 Ile Ile Phe Ile Met Ala Val Gly Thr Val Ala Ile Gly Gly Tyr Trp
 180 185 190
 Ala Gly Ser Arg Asp Val Lys Lys Arg Tyr Met Lys His Lys Arg Asp
 195 200 205
 Asp Gly Pro Glu Lys Gln Glu Asp Glu Ala Val Asp Val Thr Pro Val
 210 215 220
 Met Thr Cys Val Phe Val Val Met Cys Cys Ser Met Leu Val Leu Leu
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 245 250 255
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 Arg Leu Pro Phe Gly Lys Cys Arg Ile Pro Asn Asn Ser Leu Pro Tyr
 275 280 285
 Phe His Lys Arg Pro Gln Ala Arg Met Leu Leu Leu Ala Leu Phe Cys
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 Val Ala Val Ser Val Val Trp Gly Val Phe Arg Asn Glu Asp Gln Trp
 305 310 315 320
 Ala Trp Val Leu Gln Asp Ala Leu Gly Ile Ala Phe Cys Leu Tyr Met
 325 330 335
 Leu Lys Thr Ile Arg Leu Pro Thr Phe Lys Ala Cys Thr Leu Leu Leu
 340 345 350
 Leu Val Leu Phe Leu Tyr Asp Ile Phe Phe Val Phe Ile Thr Pro Phe
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 Leu Thr Lys Ser Gly Ser Ser Ile Met Val Glu Val Ala Thr Gly Pro
 370 375 380
 Ser Asp Ser Ala Thr Arg Glu Lys Leu Pro Met Val Leu Lys Val Pro
 385 390 395 400
 Arg Leu Asn Ser Ser Pro Leu Ala Leu Cys Asp Arg Pro Phe Ser Leu
 405 410 415
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 His Arg Phe Asp Ile Gln Val Gln Ser Ser Arg Val Tyr Phe Val Ala
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Cys Thr Ile Ala Tyr Gly Val Gly Leu Leu Val Thr Phe Val Ala Leu
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Thr Leu Val Thr Ser Cys Ala Val Ala Leu Trp Arg Arg Glu Leu Gly
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Val Phe Trp Thr Gly Ser Gly Phe Ala Lys Val Leu Pro Pro Ser Pro
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Trp Ala Pro Ala Pro Ala Asp Gly Pro Gln Pro Pro Lys Asp Ser Ala
 515 520 525

Thr Pro Leu Ser Pro Gln Pro Pro Ser Glu Glu Pro Ala Thr Ser Pro
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Trp Pro Ala Glu Gln Ser Pro Lys Ser Arg Thr Ser Glu Glu Met Gly
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 <212> PRT
 <213> Homo sapiens

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Ser Gly Asn Gly Thr Thr Lys Asp Tyr Cys Met Leu Tyr Asn Pro Tyr
 35 40 45

Trp Thr Ala Leu Pro Ser Thr Leu Glu Asn Ala Thr Ser Ile Ser Leu
 50 55 60

Met Asn Leu Thr Ser Thr Pro Leu Cys Asn Leu Ser Asp Ile Pro Pro
 65 70 75 80

Val Gly Ile Lys Ser Lys Ala Val Val Val Pro Trp Gly Ser Cys His
 85 90 95

Phe Leu Glu Lys Ala Arg Ile Ala Gln Lys Gly Gly Ala Glu Ala Met
 100 105 110

Leu Val Val Asn Asn Ser Val Leu Phe Pro Pro Ser Gly Asn Arg Ser
 115 120 125

Glu Phe Pro Asp Val Lys Ile Leu Ile Ala Phe Ile Ser Tyr Lys Asp
 130 135 140
 Phe Arg Asp Met Asn Gln Thr Leu Gly Asp Asn Ile Thr Val Lys Met
 145 150 155 160
 Tyr Ser Pro Ser Trp Pro Asn Phe Asp Tyr Thr Met Val Val Ile Phe
 165 170 175
 Val Ile Ala Val Phe Thr Val Ala Leu Gly Gly Tyr Trp Ser Gly Leu
 180 185 190
 Val Glu Leu Glu Asn Leu Lys Ala Val Thr Thr Glu Asp Arg Glu Met
 195 200 205
 Arg Lys Lys Lys Glu Glu Tyr Leu Thr Phe Ser Pro Leu Thr Val Val
 210 215 220
 Ile Phe Val Val Ile Cys Cys Val Met Met Val Leu Leu Tyr Phe Phe
 225 230 235 240
 Tyr Lys Trp Leu Val Tyr Val Met Ile Ala Ile Phe Cys Ile Ala Ser
 245 250 255
 Ala Met Ser Leu Tyr Asn Cys Leu Ala Ala Leu Ile His Lys Ile Pro
 260 265 270
 Tyr Gly Gln Cys Thr Ile Ala Cys Arg Gly Lys Asn Met Glu Val Arg
 275 280 285
 Leu Ile Phe Leu Ser Gly Leu Cys Ile Ala Val Ala Val Val Trp Ala
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 Val Phe Arg Asn Glu Asp Arg Trp Ala Trp Ile Leu Gln Asp Ile Leu
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 Phe Phe Val Phe Ile Thr Pro Phe Ile Thr Lys Asn Gly Glu Ser Ile
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 Met Val Glu Leu Ala Ala Gly Pro Phe Gly Asn Asn Glu Lys Leu Pro
 370 375 380
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 385 390 395 400
 Cys Leu Met Pro Val Ser Ile Leu Gly Phe Gly Asp Ile Ile Val Pro
 405 410 415
 Gly Leu Leu Ile Ala Tyr Cys Arg Arg Phe Asp Val Gln Thr Gly Ser
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Ser Tyr Ile Tyr Tyr Val Ser Ser Thr Val Ala Tyr Ala Ile Gly Met
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Ile Leu Thr Phe Val Val Leu Val Leu Met Lys Lys Gly Gln Pro Ala
450 455 460

Leu Leu Tyr Leu Val Pro Cys Thr Leu Ile Thr Ala Ser Val Val Ala
465 470 475 480

Trp Arg Arg Lys Glu Met Lys Lys Phe Trp Lys Gly Asn Ser Tyr Gln
485 490 495

Met Met Asp His Leu Asp Cys Ala Thr Asn Glu Glu Asn Pro Val Ile
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<210> 3

<211> 377

<212> PRT

<213> Homo sapiens

<400> 3

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Ala Leu Ala Tyr Gly Ser Leu Leu Leu Met Ala Leu Leu Pro Ile Phe
35 40 45

Phe Gly Ala Leu Arg Ser Val Arg Cys Ala Arg Gly Lys Asn Ala Ser
50 55 60

Asp Met Pro Glu Thr Ile Thr Ser Arg Asp Ala Ala Arg Phe Pro Ile
65 70 75 80

Ile Ala Ser Cys Thr Leu Leu Gly Leu Tyr Leu Phe Phe Lys Ile Phe
85 90 95

Ser Gln Glu Tyr Ile Asn Leu Leu Leu Ser Met Tyr Phe Phe Val Leu
100 105 110

Gly Ile Leu Ala Leu Ser His Thr Ile Ser Pro Phe Met Asn Lys Phe
115 120 125

Phe Pro Ala Ser Phe Pro Asn Arg Gln Tyr Gln Leu Leu Phe Thr Gln
130 135 140

Gly Ser Gly Glu Asn Lys Glu Glu Ile Ile Asn Tyr Glu Phe Asp Thr
145 150 155 160

Lys Asp Leu Val Cys Leu Gly Leu Ser Ser Ile Val Gly Val Trp Tyr
165 170 175

Leu Leu Arg Lys His Trp Ile Ala Asn Asn Leu Phe Gly Leu Ala Phe
 180 185 190
 Ser Leu Asn Gly Val Glu Leu Leu His Leu Asn Asn Val Ser Thr Gly
 195 200 205
 Cys Ile Leu Leu Gly Gly Leu Phe Ile Tyr Asp Val Phe Trp Val Phe
 210 215 220
 Gly Thr Asn Val Met Val Thr Val Ala Lys Ser Phe Glu Ala Pro Ile
 225 230 235 240
 Lys Leu Val Phe Pro Gln Asp Leu Leu Glu Lys Gly Leu Glu Ala Asn
 245 250 255
 Asn Phe Ala Met Leu Gly Leu Gly Asp Val Val Ile Pro Gly Ile Phe
 260 265 270
 Ile Ala Leu Leu Leu Arg Phe Asp Ile Ser Leu Lys Lys Asn Thr His
 275 280 285
 Thr Tyr Phe Tyr Thr Ser Phe Ala Ala Tyr Ile Phe Gly Leu Gly Leu
 290 295 300
 Thr Ile Phe Ile Met His Ile Phe Lys His Ala Gln Pro Ala Leu Leu
 305 310 315 320
 Tyr Leu Val Pro Ala Cys Ile Gly Phe Pro Val Leu Val Ala Leu Ala
 325 330 335
 Lys Gly Glu Val Thr Glu Met Phe Ser Tyr Glu Glu Ser Asn Pro Lys
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 <213> Homo sapiens

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 35 40 45
 Ser Asn Ser Ser Ser Gly Ser Phe Asn Gly Asn Ser Thr Asn Asn Ser
 50 55 60

Ile Gln Thr Ile Asp Ser Thr Gln Ala Leu Phe Leu Pro Ile Gly Ala
65 70 75 80

Ser Val Ser Leu Leu Val Met Phe Phe Phe Phe Asp Ser Val Gln Val
85 90 95

Val Phe Thr Ile Cys Thr Ala Val Leu Ala Thr Ile Ala Phe Ala Phe
100 105 110

Leu Leu Leu Pro Met Cys Gln Tyr Leu Thr Arg Pro Cys Ser Pro Gln
115 120 125

Asn Lys Ile Ser Phe Gly Cys Cys Gly Arg Phe Thr Ala Ala Glu Leu
130 135 140

Leu Ser Phe Ser Leu Ser Val Met Leu Val Leu Ile Trp Val Leu Thr
145 150 155 160

Gly His Trp Leu Leu Met Asp Ala Leu Ala Met Gly Leu Cys Val Ala
165 170 175

Met Ile Ala Phe Val Arg Leu Pro Ser Leu Lys Val Ser Cys Leu Leu
180 185 190

Leu Ser Gly Leu Leu Ile Tyr Asp Val Phe Trp Val Phe Phe Ser Ala
195 200 205

Tyr Ile Phe Asn Ser Asn Val Met Val Lys Val Ala Thr Gln Pro Ala
210 215 220

Asp Asn Pro Leu Asp Val Leu Ser Arg Lys Leu His Leu Gly Pro Asn
225 230 235 240

Val Gly Arg Asp Val Pro Arg Leu Ser Leu Pro Gly Lys Leu Val Phe
245 250 255

Pro Ser Ser Thr Gly Ser His Phe Ser Met Leu Gly Ile Gly Asp Ile
260 265 270

Val Met Pro Gly Leu Leu Leu Cys Phe Val Leu Arg Tyr Asp Asn Tyr
275 280 285

Lys Lys Gln Ala Ser Gly Asp Ser Cys Gly Ala Pro Gly Pro Ala Asn
290 295 300

Ile Ser Gly Arg Met Gln Lys Val Ser Tyr Phe His Cys Thr Leu Ile
305 310 315 320

Gly Tyr Phe Val Gly Leu Leu Thr Ala Thr Val Ala Ser Arg Ile His
325 330 335

Arg Ala Ala Gln Pro Ala Leu Leu Tyr Leu Val Pro Phe Thr Leu Leu
340 345 350

Pro Leu Leu Thr Met Ala Tyr Leu Lys Gly Asp Leu Arg Arg Met Trp
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<210> 5
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<212> PRT
<213> Mus musculus

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Ser Thr Ile Ala Tyr Ala Val Gly Met Ile Ile Thr Phe Val Val Leu
35 40 45
Met Val Met Lys Thr Gly Gln Pro Ala Leu Leu Tyr Leu Val Pro Cys
50 55 60
Thr Leu Ile Thr Val Ser Val Val Ala Trp Ser Arg Lys Glu Met Lys
65 70 75 80
Lys Phe Trp Lys Gly Ser Ser Tyr Gln Val Met Asp His Leu Asp Tyr
85 90 95
Ser Thr Asn Glu Glu Asn Pro Val Thr Thr Asp Glu Gln Ile Val Gln
100 105 110

Gln

<210> 6
<211> 378
<212> PRT
<213> Mus musculus

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20 25 30
Ala Leu Ala Tyr Gly Ser Leu Leu Leu Met Ala Leu Leu Pro Ile Phe
35 40 45
Phe Gly Ala Leu Pro Ser Val Arg Cys Ala Arg Gly Lys Ser Ser Ser
50 55 60
Asp Met Pro Glu Thr Ile Thr Ser Arg Asp Ala Ala Arg Phe Pro Ile
65 70 75 80
Ile Ala Ser Cys Thr Leu Leu Gly Leu Tyr Leu Phe Phe Lys Ile Phe
85 90 95

Ser Gln Glu Tyr Ile Asn Leu Leu Leu Ser Met Tyr Phe Phe Val Leu
100 105 110

Gly Ile Leu Ala Leu Ser His Thr Ile Ser Pro Phe Met Asn Lys Phe
115 120 125

Phe Pro Ala Asn Phe Pro Asn Arg Gln Tyr Gln Leu Leu Phe Thr Gln
130 135 140

Gly Ser Gly Glu Asn Lys Glu Glu Ile Ile Asn Tyr Glu Phe Asp Thr
145 150 155 160

Lys Asp Leu Val Cys Leu Gly Leu Ser Ser Val Val Gly Val Trp Tyr
165 170 175

Leu Leu Arg Lys His Trp Ile Ala Asn Asn Leu Phe Gly Leu Ala Phe
180 185 190

Ser Leu Asn Gly Val Glu Leu Leu His Leu Asn Asn Val Ser Thr Gly
195 200 205

Cys Ile Leu Leu Gly Gly Leu Phe Ile Tyr Asp Ile Phe Trp Val Phe
210 215 220

Gly Thr Asn Val Met Val Thr Val Ala Lys Ser Phe Glu Ala Pro Ile
225 230 235 240

Lys Leu Val Phe Pro Gln Asp Leu Leu Glu Lys Gly Leu Glu Ala Asp
245 250 255

Asn Phe Ala Met Leu Gly Leu Gly Asp Ile Val Ile Pro Gly Ile Phe
260 265 270

Ile Ala Leu Leu Leu Arg Phe Asp Ile Ser Leu Lys Lys Asn Thr His
275 280 285

Thr Tyr Phe Tyr Thr Ser Phe Ala Ala Tyr Ile Phe Gly Leu Gly Leu
290 295 300

Thr Ile Phe Ile Met His Ile Phe Lys His Ala Gln Pro Ala Leu Leu
305 310 315 320

Tyr Leu Val Pro Ala Cys Ile Gly Phe Pro Val Leu Val Ala Leu Ala
325 330 335

Lys Gly Glu Val Ala Glu Met Phe Ser Tyr Glu Glu Ser Asn Pro Lys
340 345 350

Asp Pro Ala Ala Val Thr Glu Ser Lys Glu Glu Ser Thr Glu Ala Ser
355 360 365

Ala Ser Lys Arg Leu Glu Lys Lys Glu Lys
370 375

<210> 7

<211> 257

<212> PRT

<213> Mus musculus

<400> 7

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 Thr Gly His Trp Leu Leu Met Asp Ala Leu Ala Met Gly Leu Cys Val
 35 40 45
 Ala Met Ile Ala Phe Val Arg Leu Pro Ser Leu Lys Val Ser Cys Leu
 50 55 60
 Leu Leu Ser Gly Leu Leu Ile Tyr Asp Val Phe Trp Val Phe Phe Ser
 65 70 75 80
 Ala Tyr Ile Phe Asn Ser Asn Val Met Val Lys Val Ala Thr Gln Pro
 85 90 95
 Ala Asp Asn Pro Leu Asp Val Leu Ser Arg Lys Leu His Leu Gly Pro
 100 105 110
 Asn Val Gly Arg Asp Val Pro Arg Leu Ser Leu Pro Gly Lys Leu Val
 115 120 125
 Phe Pro Ser Ser Thr Gly Ser His Phe Ser Met Leu Gly Ile Gly Asp
 130 135 140
 Ile Val Met Pro Gly Leu Leu Leu Cys Phe Val Leu Arg Tyr Asp Asn
 145 150 155 160
 Tyr Lys Lys Gln Ala Ser Gly Asp Ser Cys Gly Ala Pro Gly Xaa Ala
 165 170 175
 Asn Ile Ser Gly Arg Met Gln Lys Val Ser Tyr Phe His Cys Thr Leu
 180 185 190
 Ile Gly Tyr Phe Val Gly Leu Leu Thr Ala Thr Val Ala Ser Arg Val
 195 200 205
 His Arg Ala Ala Gln Pro Ala Leu Leu Tyr Leu Val Pro Phe Thr Leu
 210 215 220
 Leu Pro Leu Leu Thr Met Ala Tyr Leu Lys Gly Asp Leu Arg Arg Met
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 Trp Ser Glu Pro Phe His Ser Lys Ser Ser Ser Arg Phe Leu Glu
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Val

<210> 8

<211> 587

<212> PRT

<213> *Saccharomyces cerevisiae*

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Asn Lys Glu Leu Glu Gln Val Phe Glu Gln Ile Asn Ala Ile Val Glu
35 40 45
Asn His Asn Asn Lys Leu Thr Thr Ala Phe Asp Lys Ile Ser Tyr Arg
50 55 60
Val Ala His Lys Ile Thr His Leu Val Glu Ser His Ser Leu Val Phe
65 70 75 80
Asn Tyr Ala Thr Leu Val Leu Ile Ala Ser Ala Leu Val Val Ile Gly
85 90 95
Ser Phe Thr Ser Ile Ser Ser Ile Pro Phe Thr Ala Leu Pro Pro Thr
100 105 110
Arg Glu His Ser Leu Phe Asp Pro Thr Asp Phe Asp Val Asp His Asp
115 120 125
Cys His Val Ile Tyr Arg Glu Asn Asp Glu Asp Lys Lys Lys Lys Lys
130 135 140
Lys Ser Lys Arg Phe Phe Asp Met Met Asp Glu Lys His Ala Ile Ile
145 150 155 160
Leu Pro Leu Thr Ser Gly Cys Thr Leu Leu Ala Leu Tyr Phe Val Ile
165 170 175
Lys Lys Leu His Leu Asn Trp Leu Lys Tyr Val Val Lys Ile Leu Asn
180 185 190
Phe Asn Ile Thr Leu Leu Asn Ile Pro Ala Gly Thr Phe Val Tyr Ser
195 200 205
Tyr Phe Leu Asn Ser Leu Phe Arg Asn Leu Ser His Leu Ala Ser Trp
210 215 220
Asn Pro Leu Val Val Leu Pro Arg Tyr Arg Val Thr Ile Ala Asp Asp
225 230 235 240
Asn Glu Asp Leu Asn Lys Ile Gly Gly Phe Val Thr Asn Leu Asn Tyr
245 250 255
Lys Asp Gly Leu Thr Asn Ser Val Val His Lys Lys Thr Leu Asp Glu
260 265 270
Ile Glu Lys Asp His Trp Met Lys His Phe Tyr Arg Arg Glu Leu Val
275 280 285
Glu Pro Lys Asp Ile Lys Ser Lys Arg Gln Ile Ser Asn Met Tyr Leu
290 295 300

Asn Ser Ala Leu Ile Val Ser Phe Val Leu Ser Ile Val Ser Thr Val
 305 310 315 320
 Tyr Phe Tyr Leu Ser Pro Asn Asp Trp Leu Ile Ser Asn Ala Val Ser
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 Met Asn Met Ala Ile Trp Ser Ile Ala Gln Leu Lys Leu Lys Asn Leu
 340 345 350
 Lys Ser Gly Ala Leu Ile Leu Ile Ala Leu Phe Phe Tyr Asp Ile Cys
 355 360 365
 Phe Val Phe Gly Thr Asp Val Met Val Thr Val Ala Thr Asn Leu Asp
 370 375 380
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 385 390 395 400
 Asn Phe Asn Phe Ser Ile Leu Gly Leu Gly Asp Ile Ala Leu Pro Gly
 405 410 415
 Met Phe Ile Ala Met Cys Tyr Lys Tyr Asp Ile Trp Lys Trp His Leu
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 Asp His Asp Asp Thr Glu Phe His Phe Leu Asn Trp Ser Tyr Val Gly
 435 440 445
 Lys Tyr Phe Ile Thr Ala Met Val Ser Tyr Val Ala Ser Leu Val Ser
 450 455 460
 Ala Met Val Ser Leu Ser Ile Phe Asn Thr Ala Gln Pro Ala Leu Leu
 465 470 475 480
 Tyr Ile Val Pro Ser Leu Leu Ile Ser Thr Ile Leu Val Ala Cys Trp
 485 490 495
 Asn Lys Asp Phe Lys Gln Phe Trp Asn Phe Gln Tyr Asp Thr Ile Glu
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 Val Asp Lys Ser Leu Lys Lys Ala Ile Glu Lys Lys Glu Asn Ser Ile
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 Thr Tyr Ser Thr Phe Ile Leu Ser Glu Tyr Tyr Asn Asp Ala Asp Lys
 530 535 540
 Tyr Ala Leu Leu Gly Asp Asp Val Asn Glu Asn Phe Asp Asp Asp Glu
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 Ser Glu Glu Asp Leu Leu Asp Asp Glu Ser Ser
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<210> 9
 <211> 1776
 <212> DNA

<213> *Saccharomyces cerevisiae*

<400> 9

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<210> 10

<211> 1560

<212> DNA

<213> *Homo sapiens*

<400> 10

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gtgatacttc taggccttct cctcctctat gatgtatttt ttgttttcat aacaccattc 1080
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gaaaagtgtgc cagtagtcat cagagtacca aaactgatct atttctcagt aatgagtgtg 1200
tgctcatgct ctgtttcaat attgggtttt ggagacatta ttgtaccagg cctgttgatt 1260
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gggcaacctg ctctcctcta tttagtacct tgcacactta ttactgcctc agttgttgcc 1440
tggagacgta aggaaatgaa aaagtctctg aaaggtaaca gctatcagat gatggaccat 1500
ttggattgtg caacaaatga agaaaaccct gtgatatctg gtgaacagat tgtccagcaa 1560

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<210> 11
 <211> 1131
 <212> DNA
 <213> Homo sapiens

```

<400> 11
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ctcatggcgc tgctgcccac cttcttcggc gccctgcgct ccgtacgctg cgcccgcggc 180
aagaatgctt cagacatgcc tgaaacaate accagccggg atgccgcccg cttccccatc 240
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cacctcaaca atgtcagcac tggctgcacg ctgctgggag gactcttcat ctacgatgtc 660
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acagagatgt tcagttatga ggagtcaaat cctaaggatc cagcggcagt gacagaatcc 1080
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```

<210> 12
 <211> 1152
 <212> DNA
 <213> Homo sapiens

```

<400> 12
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gaaaatcaag ataaggagaa agacagtaat agttcttctg ggtctttcaa tggcaacagc 180
accaataata gcatccaaac aattgactct acccaggctc tgttccttcc aattggagca 240
tctgtctctc ttttagtaat gttcttcttc ttgtactcag ttcaagtagt ttttacaata 300
tgtacagcag ttcttgcaac gatagctttt gcttttcttc tccctccgat gtgccagat 360
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gctgctgagt tgctgtcatt ctctctgtct gtcattgctg tctcatctg ggttctcact 480
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gttgggcgtg atgttcctcg cctgtctctg cctggaaaac tgggtctccc aagctccact 780
ggcagccact tctccatggt gggcatcgga gacatcgta tgccctggtc cctactatgc 840

```

```

tttgtccttc gctatgacaa ctacaaaaag caagccagtg gggactcctg tggggcccct 900
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cccgcccttc tctatttggg gccatttact ttattgccac tcctcacgat ggctatttta 1080
aaggcgacc tccggcggat gtggtctgag ctttccact ccaagtccag cagctcccga 1140
tcctggaag ta 1152

```

<210> 13
 <211> 339
 <212> DNA
 <213> Mus musculus

```

<400> 13
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atgatcatta cctttgttgt cctgatggtg atgaaaacag ggcagcctgc tctcctctac 180
ttggtacctt gtacacttat tactgtctca gtcgttgctt ggagtcgtaa ggaaatgaaa 240
aagttctgga aaggcagcag ctatcagggt atggaccacc tggactattc aacaaatgaa 300
gaaatccag tgacgactga tgagcagatt gtacaacag 339

```

<210> 14
 <211> 1134
 <212> DNA
 <213> Mus musculus

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<400> 14
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ctcatggcgc tgctgcccct cttcttcggc gccctgccgt cggcgcgctg cgcccgccgc 180
aagagctctt cggacatgcc agaaaccatc accagtcgag atgccgcccg cttcccctac 240
atcgccagct gcacactcct ggggctctac ctctttttca aaatattctc ccaggagtac 300
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atcagcccct tcatgaataa gttttttcca gccaaacttc caaacgccca gtatcagctg 420
ctcttcacac agggctcttg ggaaaacaaa gaagagatca tcaactatga gtttgacact 480
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gccgagatgt tcagttatga ggagtccaac cctaaagatc cagcagccgt gactgaatcc 1080
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```

<210> 15
 <211> 771
 <212> DNA
 <213> Mus musculus

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<400> 15
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tacctgtctg tcatgctcgt cctcatctgg gttctcactg gccactggct tctcatggat 120
gctctggcca tgggtctctg tgttgccatg atcgccctcg tccgctgcc aagcctcaag 180

```

```

gtttcctgcc tgccttctctc agggcttctc atctacgatg tcttctgggt gttcttctca 240
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actgcgactg tggcgtctcg cgtccaccga gctgccagc cagctctcct ctacttgggtg 660
ccatttacc ctttgcact cctcaccatg gcctacctaa agggtgactt acggaggatg 720
tggtctgagc cttccactc caagtccagc agctcccgtt tcttgggaagt a 771

```

<210> 16

<211> 1761

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 16

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gaacagatca atgctatagt tgaaaaccac aataacaaat taaccactgc ctttgataag 180
atatcatatc gcgttgctca caagattaca cacttgggtg aaagccattc tttagtattc 240
aactacgcca ctttagttct catcgcaagt gcttgggtcg ttattggctc atttacgtct 300
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aagaaaaaga agaaaagcaa gaggtttttc gatatgatgg atgaaaaaca tgcgattata 480
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gatgccgaca agtatgcctt gcttgggtgat gatgtaaacg aaaattttga cgatgatgaa 1680
gaattcgtgc aagaggaaga tctcagtgc agctctgagg aagagctttc tgaagaagat 1740
ctcttggatg acgaatcttc t 1761

```

<210> 17

<211> 1560

<212> DNA

<213> *Homo sapiens*

<400> 17

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cagctgacag ccgctcagga agcaatcttg catgcgtctg gaaatggcac aaccaaggac 120

```



```

tactgcatgc tttataaccc ttattggaca gctcttccaa gtaccctaga aaatgcaact 180
tccattagtt tgatgaatct gacttccaca ccactatgca acctttctga tattcctcct 240
gttggcataa agagcaaagc agttgtggtt ccatggggaa gctgccattt tcttgaaaaa 300
gccagaattg cacagaaagg aggtgctgaa gcaatgttag ttgtcaataa cagtgtccta 360
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tattctccat cgtggcctaa ctatgattat actatgggtg gtatttttgg aattgcggtg 540
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gtgacaactg aagatagaga aatgaggaaa aagaaggaag aatatttaac ttttagtcct 660
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```

<210> 18

<211> 520

<212> PRT

<213> Homo sapiens

<400> 18

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Met Gly Pro Gln Arg Arg Leu Ser Pro Ala Gly Ala Ala Leu Leu Trp
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```

```

Gly Phe Leu Leu Gln Leu Thr Ala Ala Gln Glu Ala Ile Leu His Ala
      20                      25                      30

```

```

Ser Gly Asn Gly Thr Thr Lys Asp Tyr Cys Met Leu Tyr Asn Pro Tyr
      35                      40                      45

```

```

Trp Thr Ala Leu Pro Ser Thr Leu Glu Asn Ala Thr Ser Ile Ser Leu
      50                      55                      60

```

```

Met Asn Leu Thr Ser Thr Pro Leu Cys Asn Leu Ser Asp Ile Pro Pro
      65                      70                      75                      80

```

```

Val Gly Ile Lys Ser Lys Ala Val Val Val Pro Trp Gly Ser Cys His
      85                      90                      95

```

```

Phe Leu Glu Lys Ala Arg Ile Ala Gln Lys Gly Gly Ala Glu Ala Met
      100                      105                      110

```

```

Leu Val Val Asn Asn Ser Val Leu Phe Pro Pro Ser Gly Asn Arg Ser
      115                      120                      125

```

```

Glu Phe Pro Asp Val Lys Ile Leu Ile Ala Phe Ile Ser Tyr Lys Asp
      130                      135                      140

```

Phe Arg Asp Met Asn Gln Thr Leu Gly Asp Asn Ile Thr Val Lys Met
 145 150 155 160
 Tyr Ser Pro Ser Trp Pro Asn Tyr Asp Tyr Thr Met Val Gly Ile Phe
 165 170 175
 Gly Ile Ala Val Phe Thr Gly Ala Leu Ser Gly Tyr Trp Ser Gly Leu
 180 185 190
 Val Glu Leu Glu Asn Leu Lys Ala Val Thr Thr Glu Asp Arg Glu Met
 195 200 205
 Arg Lys Lys Lys Glu Glu Tyr Leu Thr Phe Ser Pro Leu Thr Val Val
 210 215 220
 Ile Phe Val Val Ile Cys Cys Val Met Met Val Leu Leu Tyr Phe Phe
 225 230 235 240
 Tyr Lys Trp Leu Val Tyr Val Met Ile Ala Ile Phe Cys Ile Ala Ser
 245 250 255
 Ala Met Ser Leu Tyr Asn Cys Leu Ala Ala Leu Ile His Lys Ile Pro
 260 265 270
 Tyr Gly Gln Cys Thr Ile Ala Cys Arg Gly Lys Asn Met Glu Val Arg
 275 280 285
 Leu Ile Phe Leu Ser Gly Leu Cys Ile Ala Val Ala Val Val Trp Ala
 290 295 300
 Val Phe Arg Asn Glu Asp Arg Trp Ala Trp Ile Leu Gln Asp Ile Leu
 305 310 315 320
 Gly Ile Ala Phe Cys Leu Asn Leu Ile Lys Thr Leu Lys Leu Pro Asn
 325 330 335
 Phe Lys Ser Cys Val Ile Leu Leu Gly Leu Leu Leu Leu Tyr Asp Val
 340 345 350
 Phe Phe Val Phe Ile Thr Pro Phe Ile Thr Lys Asn Gly Glu Ser Ile
 355 360 365
 Met Val Glu Leu Ala Ala Gly Pro Phe Gly Asn Asn Glu Lys Leu Pro
 370 375 380
 Val Val Ile Arg Val Pro Lys Leu Ile Tyr Phe Ser Val Met Ser Val
 385 390 395 400
 Cys Leu Met Pro Val Ser Ile Leu Gly Phe Gly Asp Ile Ile Val Pro
 405 410 415
 Gly Leu Leu Ile Ala Tyr Cys Arg Arg Phe Asp Val Gln Thr Gly Ser
 420 425 430
 Ser Tyr Ile Tyr Tyr Val Ser Ser Thr Val Ala Tyr Ala Ile Gly Met
 435 440 445

Ile Leu Thr Phe Val Val Leu Val Leu Met Lys Lys Gly Gln Pro Ala
450 455 460

Leu Leu Tyr Leu Val Pro Cys Thr Leu Ile Thr Ala Ser Val Val Ala
465 470 475 480

Trp Arg Arg Lys Glu Met Lys Lys Phe Trp Lys Gly Asn Ser Tyr Gln
485 490 495

Met Met Asp His Leu Asp Cys Ala Thr Asn Glu Glu Asn Pro Val Ile
500 505 510

Ser Gly Glu Gln Ile Val Gln Gln
515 520

<210> 19

<211> 684

<212> PRT

<213> Homo sapiens

<400> 19

Met Ala Cys Leu Gly Phe Leu Leu Pro Val Gly Phe Leu Leu Leu Ile
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Ser Thr Val Ala Gly Gly Lys Tyr Gly Val Ala His Val Val Ser Glu
20 25 30

Asn Trp Ser Lys Asp Tyr Cys Ile Leu Phe Ser Ser Asp Tyr Ile Thr
35 40 45

Leu Pro Arg Asp Leu His His Ala Pro Leu Leu Pro Leu Tyr Asp Gly
50 55 60

Thr Lys Ala Pro Trp Cys Pro Gly Glu Asp Ser Pro His Gln Ala Gln
65 70 75 80

Leu Arg Ser Pro Ser Gln Arg Pro Leu Arg Gln Thr Thr Ala Met Val
85 90 95

Met Arg Gly Asn Cys Ser Phe His Thr Lys Gly Trp Leu Ala Gln Gly
100 105 110

Gln Gly Ala His Gly Leu Leu Ile Val Ser Arg Val Ser Asp Gln Gln
115 120 125

Cys Ser Asp Thr Thr Leu Ala Pro Gln Asp Pro Arg Gln Pro Leu Ala
130 135 140

Asp Leu Thr Ile Pro Val Ala Met Leu His Tyr Ala Asp Met Leu Asp
145 150 155 160

Ile Leu Ser His Thr Arg Gly Glu Ala Val Val Arg Val Ala Met Tyr
165 170 175

Ala Pro Pro Glu Pro Ile Ile Asp Tyr Asn Met Leu Val Ile Phe Ile
180 185 190

Leu Ala Val Gly Thr Val Ala Ala Gly Gly Tyr Trp Ala Gly Leu Thr
 195 200 205
 Glu Ala Asn Arg Leu Gln Arg Arg Arg Ala Arg Arg Gly Gly Gly Ser
 210 215 220
 Gly Gly His His Gln Leu Gln Glu Ala Ala Ala Ala Glu Gly Ala Gln
 225 230 235 240
 Lys Glu Asp Asn Glu Asp Ile Pro Val Asp Phe Thr Pro Ala Met Thr
 245 250 255
 Gly Val Val Val Thr Leu Ser Cys Ser Leu Met Leu Leu Leu Tyr Phe
 260 265 270
 Phe Tyr Asp His Phe Val Tyr Val Thr Ile Gly Ile Phe Gly Leu Gly
 275 280 285
 Ala Gly Ile Gly Leu Tyr Ser Cys Leu Ser Pro Leu Val Cys His Leu
 290 295 300
 Ser Leu Arg Gln Tyr Gln Arg Pro Pro His Ser Leu Trp Ala Ser Leu
 305 310 315 320
 Pro Leu Pro Leu Leu Leu Leu Ala Ser Leu Cys Ala Thr Val Ile Ile
 325 330 335
 Phe Trp Val Ala Tyr Arg Asn Glu Asp Arg Trp Ala Trp Leu Leu Gln
 340 345 350
 Asp Thr Leu Gly Ile Ser Tyr Cys Leu Phe Val Leu His Arg Val Arg
 355 360 365
 Leu Pro Thr Leu Lys Asn Cys Ser Ser Phe Leu Leu Ala Leu Leu Ala
 370 375 380
 Phe Asp Val Phe Phe Val Phe Val Thr Pro Phe Phe Thr Lys Thr Gly
 385 390 395 400
 Glu Ser Ile Met Ala Gln Val Ala Leu Gly Pro Ala Glu Ser Ser Ser
 405 410 415
 His Glu Arg Leu Pro Met Val Leu Lys Val Pro Arg Leu Arg Val Ser
 420 425 430
 Ala Leu Thr Leu Cys Ser Gln Pro Phe Ser Ile Leu Gly Phe Gly Asp
 435 440 445
 Ile Val Val Pro Gly Phe Leu Val Ala Tyr Cys Cys Arg Phe Asp Val
 450 455 460
 Gln Val Cys Ser Arg Gln Ile Tyr Phe Val Ala Cys Thr Val Ala Tyr
 465 470 475 480
 Ala Val Gly Leu Leu Val Thr Phe Met Ala Met Val Leu Met Gln Met
 485 490 495

Gly Gln Pro Ala Leu Leu Tyr Leu Val Ser Ser Thr Leu Leu Thr Ser
500 505 510

Leu Ala Val Ala Ala Cys Arg Gln Glu Leu Ser Leu Phe Trp Thr Gly
515 520 525

Gln Gly Arg Ala Lys Met Cys Gly Leu Gly Cys Ala Pro Ser Ala Gly
530 535 540

Ser Arg Gln Lys Gln Glu Gly Ala Ala Asp Ala His Thr Ala Ser Thr
545 550 555 560

Leu Glu Arg Gly Thr Ser Arg Gly Ala Gly Asp Leu Asp Ser Asn Pro
565 570 575

Gly Glu Asp Thr Thr Glu Ile Val Thr Ile Ser Glu Asn Glu Ala Thr
580 585 590

Asn Pro Glu Asp Arg Ser Asp Ser Ser Glu Gly Trp Ser Asp Ala His
595 600 605

Leu Asp Pro Asn Glu Leu Pro Phe Ile Pro Pro Gly Ala Ser Glu Glu
610 615 620

Leu Met Pro Leu Met Pro Met Ala Met Leu Ile Pro Leu Met Pro Leu
625 630 635 640

Met Pro Pro Pro Ser Glu Leu Gly His Val His Ala Gln Ala Gln Ala
645 650 655

His Glu Thr Gly Leu Pro Trp Ala Gly Leu His Lys Arg Lys Gly Leu
660 665 670

Lys Val Arg Lys Ser Met Ser Thr Gln Ala Pro Leu
675 680

<210> 20

<211> 2052

<212> DNA

<213> Homo sapiens

<400> 20

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